microSYST

migan BCD
Large Display Numeric LED with BCD Inputs

User Manual

migan BCD
Large Display Numeric LED with BCD Inputs

Index

migan BCD
Large Display Numeric LED with BCD Inputs

1 General

The large format numeric display can be used universally as a production display unit or as an information board.

The modular design allows for cost-effective models of various sizes, and with different character heights and numbers of digits.

Thus integration into existing equipment or systems is easy and simple.

2 System Overview

The display is controlled with BCD inputs.

BCD coded inputs
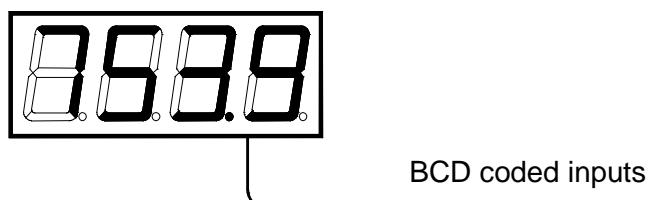
3 Technical Information

3.1 Notes for the start-up

- When putting on the power supply, the following sequence has to be observed:
  - Connect the power supply cable to the display.
  - Connect the power supply cable to the power supply.

- When disconnecting the power supply, the following sequence has to be observed:
  - Disconnect the power supply cable from the power supply.
  - Disconnect the power supply cable from the display.

migan BCD
Large Display Numeric LED with BCD Inputs

3.2 Device Configuration

Type:
☐ for inside use   ☐ for outside use

Character height:
☐ 60 mm   ☐ 100 mm   ☐ 150 mm   ☐ 200 mm   ☐ 250 mm   ☐ 300 mm

Number of lines: _____   **Number of digits per line**: _____

Display colour:
☐ red   ☐ green   ☐ _____

Dimensional Display:
Line 1: _____   Line 5: _____
Line 2: _____   Line 6: _____
Line 3: _____   Line 7: _____
Line 4: _____   Line 8: _____

View:
☐ single sided   ☐ double sided   ☐ quadruple sided

Operating Voltage:
☐ 230 V / 50 Hz   ☐ 110 V / 60 Hz   ☐ 24 V DC

Protection:
☐ IP54   ☐ IP65   ☐ IP _____

Operating temperature:
☐ 0 to +50 ℃   ☐ -20 to +50 ℃   ☐ -25 to +50 ℃   ☐ _____℃

Housing dimensions: _____x_____x_____mm

Housing Material:
☐ Aluminum profile   ☐ Stainless steel   ☐ Sheet metal

Controlling:
☐ BCD parallel   ☐ BCD multiplex

migan BCD
Large Display Numeric LED with BCD Inputs

3.3 Overall Specification

	migan for indoor use	migan for outdoor use
Display type	7 segment LED	7 segment single LED, pixel size: 5.2 x 3.8 mm (oval)
Angle of radiation	n/a	110°/50° (horizontal/vertica l)
Character height	60 / 100 / 150 / 200 / 250 mm	100 / 200 / 300 mm
Digits	1 to 4 / 6, optional 8 / 12	
Number of lines	standard 1 line, multiple lines on request	
Display colour	standard: red; optional: green	
Light intensity	n/a	red > 3100 cd/m², green > 3720 cd/m²,
Brightness control	n/a	automatically
Operating voltage	230 VAC / 50 Hz, 110 VAC / 60 Hz or 24 VDC ±20%	
View	single sided to four sided	
Interface	BCD, multiplex or parallel	
Input level	U_{low} 0 to 4 VDC, U_{high} 11 to 30 VDC	
Displayable characters	0 to 9, H, E, L, P, -, Blank, .	0 to 9, H, E, L, P, -, Blank, .(*) *decimal point only possibile at numerals
Labelling	upon request	
Housing	industrial version, powder coated aluminum	
Housing colour	RAL 7016 (anthracite)	
Mounting	articulated arm, angle bracket, hanging with chain or mounting frame	
Protection	IP54 or IP65	IP65 for outdoor use
Operating temp.	0...+50 ℃	standard: -20...+50 ℃, optional with heating: -25 to +50 ℃
Storage temperature	-25...+70 ℃	

Parallel BCD
Four data transmission lines are required for the control of each digit.
The display of values requires static data entry in BCD code.

Multiplex BCD
The multiplex BCD operating mode is recommended for the display of multiple digits. Data transmission lines are set up as a 4-bit bus.

3.4 Control Signals

The following comments describe the default settings of the standard product. Special requests of the customer can usually be complied. This means, the following description could differ from the delivered product.

BCD parallel/BCD multiplex							Display
Input							
LE	BI	LT	D	C	B	A	
0	1	1	0	0	0	0	0
0	1	1	0	0	0	1	1
0	1	1	0	0	1	0	2
0	1	1	0	0	1	1	3
0	1	1	0	1	0	0	4
0	1	1	0	1	0	1	5
0	1	1	0	1	1	0	6
0	1	1	0	1	1	1	7
0	1	1	1	0	0	0	8
0	1	1	1	0	0	1	9
0	1	1	1	0	1	0	H*
0	1	1	1	0	1	1	E*
0	1	1	1	1	0	0	L*
0	1	1	1	1	0	1	P*
0	1	1	1	1	1	0	„Space"*
0	1	1	1	1	1	1	-*
x	x	0	x	x	x	x	8.
x	0	1	x	x	x	x	no display
1	1	1	x	x	x	x	#

0=LOW signal, 1=HIGH signal

LE = 1 = Keep the last display.
0 = Adopt the current BCD data and display it.

\# = The display depends on the data, which were applied before the rising edge of LE. The data must not be changed 2 ms before the rising edge!

x = any state

* = These characters are only displayed, if the internal DIP switch S1-4 is in ON position, otherwise this digit is deleted.
At migan displays for outside use, no decimal points are possible in combination with these characters.

LT input (lamp test)

The lamp test is performed with a "LOW" signal at the "LT" input. Then, all available segments are controlled.

Decimal Point Input

The decimal points of the digits can be controlled separately by connecting to a "HIGH" signal to the corresponding input.

Blank Input

The display is dark-switched with a „HIGH" signal at the blank input.

Open Inputs

If inputs are not connected, a particular standard level is read in:

| Input	Standard level
A (2^0)	LOW (0)
B (2^1)	LOW (0)
C (2^2)	LOW (0)
D (2^3)	LOW (0)
LE	LOW (adopt the data)
LT	HIGH (no lamp test)
Dec. point	LOW (no decimal point)
Blank	HIGH (no blanking)

3.5 Impulse Diagram (multiplex operation)
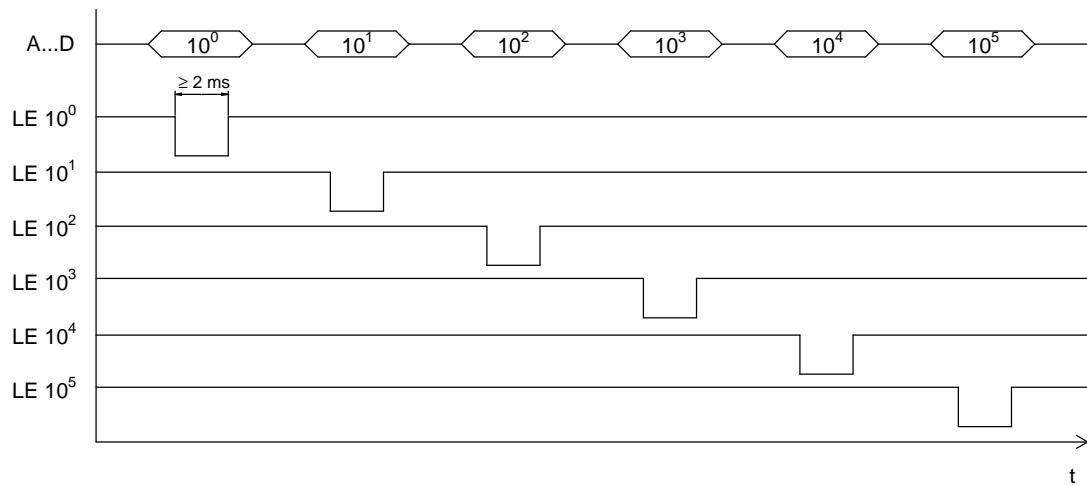
migan BCD
Large Display Numeric LED with BCD Inputs

3.6 Connector Pin Assignments

Input

Mains Power, 230 VAC

Circular Connector, 24 VDC
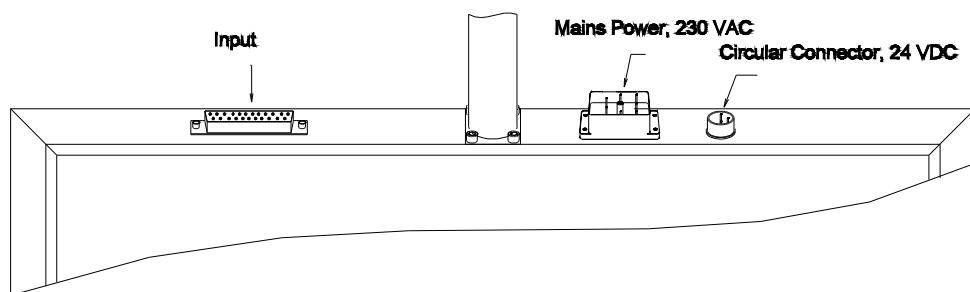
Input (25-Pole Sub-D Plug Connector)

Parallel BCD				Multiplex BCD			
1	GND	14	Data $2^1/10^1$	1	GND	14	Blank $/10^2$
2	n.c.	15	Data $2^2/10^1$	2	n.c.	15	LE $/10^1$
3	Data $2^0/10^3$	16	Data $2^3/10^1$	3	LE $/10^5$	16	Dec.point $/10^1$
4	Data $2^1/10^3$	17	Dec.point $/10^1$	4	Dec.point $/10^5$	17	Blank $/10^1$
5	Data $2^2/10^3$	18	Data $2^0/10^0$	5	Blank $/10^5$	18	LE $/10^0$
6	Data $2^3/10^3$	19	Data $2^1/10^0$	6	LE $/10^4$	19	Dec.point $/10^0$
7	Dec.point$/10^3$	20	Data $2^2/10^0$	7	Dec.point $/10^4$	20	Blank $/10^0$
8	Data $2^0/10^2$	21	Data $2^3/10^0$	8	Blank $/10^4$	21	Data 2^0
9	Data $2^1/10^2$	22	LE	9	LE $/10^3$	22	Data 2^1
10	Data $2^2/10^2$	23	Blank	10	Dec.point $/10^3$	23	Data 2^2
11	Data $2^3/10^2$	24	LT	11	Blank $/10^3$	24	Data 2^3
12	Dec.point $/10^2$	25	n.c.	12	LE $/10^2$	25	LT
13	Data $2^0/10^1$			13	Dec.point $/10^2$		

Power Connector 230 VAC
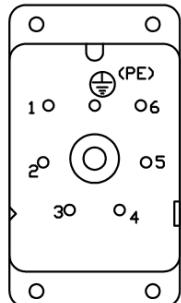
Pin	Assignment
1	L1
2	N
⏚ (PE)	PE

Power Connector 24 VDC (optional)
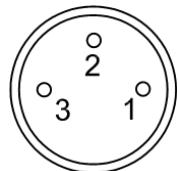
Pin	Assignment
1	GND
2	+24 VDC
3	PE

3.7 DIP Switches

The DIP switches of the internal BCD board have already the right settings and must not be changed by the user!

migan BCD
Large Display Numeric LED with BCD Inputs

4 Appendix

4.1 Maintenance and Care

Please observe the following instructions:

- Make sure that the housing can be opened for adjustment and maintenance even after the display has been installed. Allow for adequate clearance at the back, front and top of the display unit in order to allow for sufficient ventilation (if vent slots are included).

- Display quality is impaired by direct illumination with bright light sources and/or direct sunlight.

- The display must be switched off before cleaning.

- Protect the display from excessive humidity, extreme vibration, direct sunlight and extreme temperatures. Non-observance may lead to malfunctioning or destruction of the device. Under certain circumstances electrical shock, fire and explosion may occur as well. Information concerning allowable ambient conditions, including recommended temperature ranges, can be found in the chapter entitled "Technical Information".

- The display may not be placed into service if the device and/or the power cable are damaged.

- Do not attempt to repair the device yourself. The guarantee is rendered null and void if unauthorized persons tamper with the device.

migan BCD
Large Display Numeric LED with BCD Inputs

microSYST

4.2 Declaration of Conformity

EG-Konformitätserklärung
Declaration of EC-Conformity

Produktbezeichnung: **migan BCD**
Product name:

Produktbeschreibung: Numerische LED-Großanzeige mit BCD-Eingängen /
Product description: Large Display Numeric LED with BCD Inputs

Hersteller: microSYST Systemelectronic GmbH
Manufacturer: Albert-Einstein-Straße 7
92637 Weiden

Das bezeichnete Produkt stimmt mit der folgenden Europäischen Richtlinie überein: We herewith confirm that the above mentioned product meets the requirements of the following standard:		**Die Übereinstimmung des bezeichneten Produktes mit den Vorschriften der Richtlinie wird nachgewiesen durch die vollständige Einhaltung folgender Normen:** The correspondence of the above mentioned product with these requirements is proved by the fact that these products meet with the following single standards:
Nummer	**Bezeichnung**	**Europäische Norm**
2004/108/EG	**Elektromagnetische Verträglichkeit (EMV)**	EN61000-6-2:2006 EN61000-6-4:2007

Weiden, den 27.03.2013
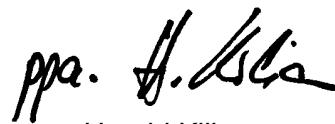
Harald Kilian

Leiter operatives Geschäft / COO
Prokurist / Authorized Signatory

4.3 Warranty / Liability

For the product, liability is assumed for defects, which existed at the delivery date according to our General Terms and Conditions.

Technically changes as well as errors are excepted. A claim for delivery of a new product does not exist. The buyer has to check the received product immediately and indicate evident defects at the latest 24 hours after detection. Non-observance of notification requirements is equated with acceptance of the defect. Not immediately visible defects have to be indicated immediately after their perception too.

Generally, defects and their symptoms must be described as accurately as possible in order to allow for reproducibility and elimination. The buyer must provide for access to the relevant device and all required and/or useful information at no charge and must make all of the required data and machine time available free of charge.

The guarantee does not cover defects, which result from non-observance of the prescribed conditions of use, or from improper handling.

If the device has been placed at the disposal of the buyer for test purposes and has been purchased subsequent to such testing, both parties agree that the product is to be considered "used" and that it has been purchased "as is". No guarantee claims may be made in such cases.

The General Terms and Conditions of microSYST Systemelectronic GmbH in current version apply as well.

migan BCD
Large Display Numeric LED with BCD Inputs

4.4 Versions Overview

Version	Date	Remark, Description
1.00	2013-05-14	Document created, based on X-M32-BSXXBX-001: display type, character heights changed
1.10	2013-10-17	Logo
1.20	2014-01-22	migan 2 -> migan

Certified per **DIN EN ISO 9001**.